CHICAGO CRIME ANALYSIS DASHBOARD

Using a **MARTINI GLASS HYBRID STRUCTURE** and following the path of Author-Driven Insights to Reader-Driven Exploration of Chicago's Crime Trends and Arrest Rates for Domestic vs. Non-Domestic Incidents.

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1.DATA SOURCES, DASHBOARD, AND RESOURCES

- **Narrative Visualization is hosted in git public repository here**

Dataset: The data reflects reported incidents of crime that have occurred in the City of Chicago over the past year. Data is extracted from the Chicago Police Department's CLEAR (Citizen Law Enforcement Analysis and Reporting) system.

- Data is obtained from data.gov site here
- Additional processing and summarization conducted for visualization. Processed dataset is located here
- Additional details about the dataset can be obtained here

2.MESSASING:

What is the message you are trying to communicate with the narrative visualization?

The message I'm conveying with the narrative visualization is that

- Chicago crime trends are on the rise in 2024 for both domestic and non-domestic incidents. *(illustrated through guided charts showing the trend of each crime type in scene 1 & 2)*
- Despite non-domestic crimes being four times more frequent compared to domestic crimes, the **arrest percentage is higher for domestic crimes**. *(illustrated through interactive comparative chart of arrest %, highlighting the significant disparity in arrest rates and details of demand using tooltips)*

3.NARRATIVE STRUCTURE

Which structure was your narrative visualization designed to follow?

- Martini Glass Hybrid Structure is used.

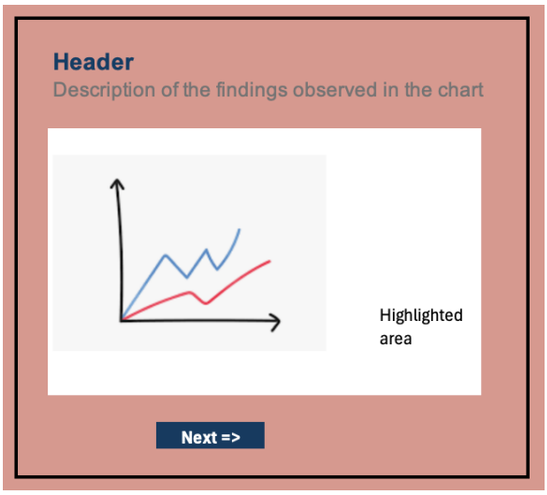
How does your narrative visualization follow that structure?

Initial data analysis ***revealed intriguing patterns in crime incidents by nature*** (Domestic vs. Non-Domestic) and their corresponding arrest rates.
I aim to share these insights with readers using a streamlined, author-led approach through message-focused, non-interactive scenes (Scenes 1 & 2).
Subsequently, an interactive scene (Scene 3) which will enable users to explore these observations further.
Also, considering that the volume of data might be too big to present it to users directly, Martini glass structure is used.

4. VISUAL STRUCTURE

What visual structure is used for each scene?

All the scenes use consistent theme and layout and follow the below template



How does it ensure the viewer can understand the data and navigate the scene?

To ensure viewers can understand the data and navigate the scene, the following elements are incorporated:

- A **header** provides a brief overview to help the reader grasp the chart's findings.
- A **text description** below the chart offers a detailed explanation of the data.
- Each slide is navigable **using right arrow buttons for ease of progression.**
- The navigation through the interactive narratives is **one-directional to next page,** leading to the last page, where there is an option to restart from the Home page.

How does it highlight to urge the viewer to focus on the important parts of the data in each scene?

The scene is designed to draw the viewer's attention to the chart as the focal point. This is achieved through two main strategies:

1. The chart is set to use a white background, which **contrasts with the darker background** of the scene.
2. The chart is **centrally aligned** and occupies the maximum space on the page, ensuring it stands out prominently.

How does it help the viewer transition to other scenes, to understand how the data connects to the data in other scenes?

- Scene 1 captures incidents for non-domestic crimes independently.
- Scene 2 captures the same metrics for Domestic crimes.
- Scene 3 captures the Arrest% of Domestic and Non-Domestic crimes.
- Using tooltips, the data from the other scenes are connected and brought together to establish connectivity of the information.

Sample tooltip shown below with information from all the scenes connected to each other.

5.SCENES

What are the scenes of your narrative visualization?

- ***Five Webpages***

No.	Page Name	Page Description

1	*Introduction*	*Introduction page to establish the context of the Interactive webpage.*
2	*About the visualization*	*provides the design choices made for the Interactive visualization.*
3	Scene 1	Non-Domestic Crime Trends
4	Scene 2	Domestic Crime Trends
5	Scene 3	Arrest rates by Domestic & Non-Domestic crimes

- ***Three scenes***

Scene 1	Non-Domestic Crime Trends	Non-Interactive
Scene 2	Domestic Crime Trends	Non-Interactive
Scene 3	Arrest rates by Domestic & Non-Domestic crimes	Interactive

How are the scenes ordered, and why?

It is ordered to follow Martini glass hybrid structure and the *jump off point is after the scene 2.*

- Scenes are ordered to show the highest contributor in scene 1, non-domestic crimes trends for the last year averaging to 18k for the given dataset for the last year.
- Followed, by Domestic crimes trends that average to 4k (Scene 2).
- Scene 3 is interactive that shows the arrest % trends by Domestic or Non-domestic chart. *(Free-form user interaction through tooltip popups & radio button selection)*

6.ANNOTATIONS

What template was followed for the annotations, and why that template?

- The template for the annotations involved using a **red dashed rectangle** to highlight the range of data points central to the messaging.
- This template was chosen because the *red color contrasts sharply with the white background*, ensuring that the highlighted area stands out.
- Additionally, the **text providing context is colored to match the red rectangle**, *creating a **visual association and reinforcing the connection*** between the annotations and the specific data points they refer to.
- This template is ***consistently*** applied in the two non-interactive message-focused scenes, while tooltips are used in the interactive scene to maintain user engagement.

How are the annotations used to support the messaging?

The annotations support the messaging by visually highlighting the specific range of data points that are important for the viewer to focus on.

- 1. red dashed rectangle draws attention to these data points
- 2. matching red text provides additional context
- Together, guiding the viewer's understanding of what they should gather from the highlighted selection.

This **consistent** use of color and style ensures that the viewer can easily identify and interpret the key areas of focus, reinforcing the intended message.

Do the annotations change within a single scene, and if so, how and why

Annotations are used in Scene 1 and Scene 2.
The line chart animates upon selecting a scene. Initially, the annotations were appearing before the animation completed.
To address this, I have incorporated sequencing so that annotations only appear after the line chart animation finishes, allowing the state of the annotations to change within each scene.

This approach ensures clarity and maintains viewer focus on the evolving data.
This sequencing is applied consistently across both scenes that use annotations.

7. PARAMETERS

What are the parameters of the narrative visualization?

Scene	Parameter	State	Function
Scene 1	Crime type	*Line chart using y-axis = “non-domestic field’ *RenderChart function parameter state =” Non-domestic”	render Chart
Scene 2	Crime type	Line chart using y-axis = “domestic field’ *RenderChart function parameter state =” domestic”	render Chart

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- Scene 1 and Scene 2 generate a line chart based on the Crime type parameter (Domestic vs. Non-Domestic).
- Scene 3 takes advantage of the same line chart functionality but use a dual charts and KPI in % to accommodate the interactivity of the scene in the Martini hybrid structure.

What are the states of the narrative visualization?

- I have used a single function “renderchart” that generates the line chart by Year month for the last 1 year.

How are the parameters used to define the state and each scene?

- Based on the state of Crime type parameter (Domestic or Non-Domestic state), the function generates charts that shows trends of crime incidents corresponding to parameter value.

Additional formatting customizations are incorporated within the same functions based on the state change of the parameter

8.TRIGGERS

What are the triggers that connect user actions to changes of state in the narrative visualization?
What affordances are provided to the user to communicate to them what options are available to them in the narrative visualization?

- The animation of chart 1 and 2 will be triggered automatically when the scene / slide is displayed.
- Scene 3 selection of Radio button crime types as Domestic, Non-Domestic or both triggers the chart to show the line chart corresponding to the parameter selected in the radio button
- Changing filter in chart 3 will also trigger the chart animation.

.REFERENCES

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End of Essay
